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Contents for Week of November 18, 1935. Vol. XIV. No. 19.

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Photograph by A. M. Hassanein Bey

THE DESERT'S MEMORY BOOK

For thousands of years the desert has preserved these souvenirs of life that has vanished. They arouse, however, not memories but questions as to their mysterious origin. Lions, giraffes, ostriches, and gazelles are depicted by lines carved on rocks of the Ouenat Oasis of the Libian Desert (See Bulletin No. 1).

HOW TEACHERS MAY OBTAIN THE BULLETINS

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The Libian Desert: Desolate Bulwark Between Libia and Egypt

DESERT—dry, bare, hard and stony, furnace-hot by day and often near freezing at night, almost empty of life—such is the desolate region where Italian soldiers have been facing British and Egyptian forces across the Libian-Egyptian frontier.

Boundaries of this area are vague, because it is too forbidding for much exploration and also because it is really the eastern end of the Sahara, or Great Desert, the limits to which no one has known or cared how to set definitely. It has been estimated that the Libian Desert covers nearly a million square miles, the most inhospitable and unknown territory of its size on earth. It contains a few oases that make caravan routes possible but difficult—then dangerous blankness.

An Oasis on Each Side of the Border

The northern part of it is roughly cut in half by the border between Egypt and Libia, a line extending from the Mediterranean southward for 650 miles. The chief oasis on the Egyptian side is Siwa, believed to have been colonized for nearly 2,200 years. Alexander the Great penetrated its seclusion to consult the oracle of Jupiter Ammon. Less intrepid adventurers, however, were not always as successful as he. In 525 B.C. an Egyptian army of 50,000 men became lost in the desert on the way to attack Siwa, and the entire force perished of thirst.

On the Libian side of the border is the oasis of Giarabub, stronghold of the Senussi sect, a "Puritan" branch of the Mohammedan religion established within the past century.

These two oases, about 100 miles apart and on opposite sides of the border, might serve as bases for frontier military operations. In spite of numerous wireless stations and attempts at automobile highways, they are both extremely inaccessible. Forbidding as the territory is, however, during the World War Moslem tribes under Turkish and German sponsorship fought unsuccessfully there against Anglo-Egyptian forces in one of the unsung "sideshows" of the European conflict.

A thin crescent of cultivable land along the Nile and the seacoast caps the northeast part of the Libian Desert. On this narrow coastal strip date palms, oranges, olives, grains, and produce grow. Here too are found cattle and camel grazing, and forests are being planted on the sand dunes with the hope of recapturing the desert. Only one twenty-fifth of Egypt's area can be cultivated. With the exception of this little region, the desert rules.

Unexplored Trackless Wastes

Open, waterless, sandy areas stretch for uncounted miles. Travelers have pushed through them for as many as three days at a time without seeing the least evidence of life. At some points the sands have been blown into long dunes running from northeast to southwest, with a gentle slope on one side and a steep drop on the other, so that east-to-west travel is extremely difficult.

There are regions of "watermelon desert," where rounded boulders scattered over the flat wastes have inspired the name. In other places, especially painful to travel over, jagged rocks shift beneath the traveler's feet as he labors up and down steep slopes. Huge flat mountains of black volcanic rock rise abruptly from the desert floor, blocking progress for miles. A spot in the southern area, where the

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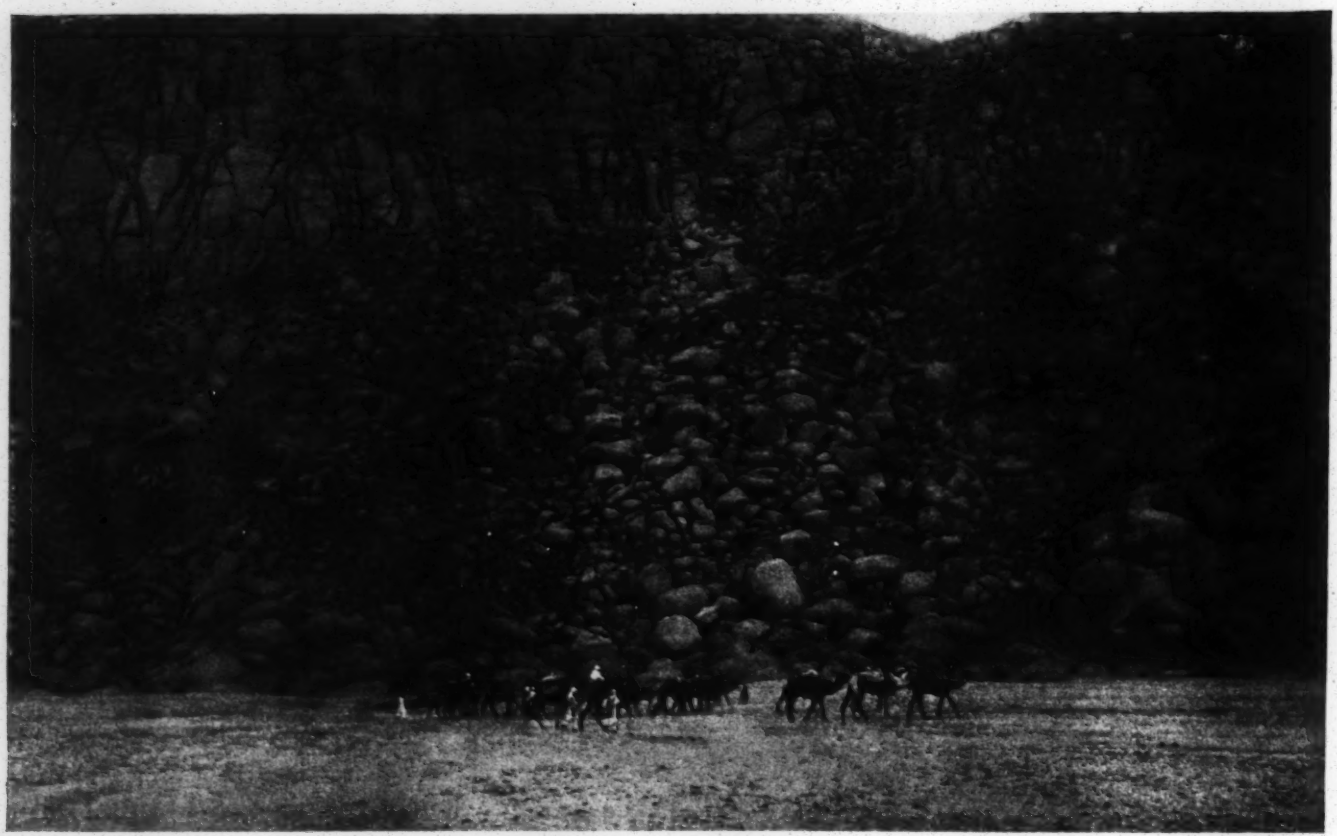

Photograph by A. M. Hassanein Bey

THREE GENERATIONS OF DESERT

This is a reminder that desert sands are literally and figuratively descended from mountains of rock. First, the mountain is cracked into gigantic boulders by extremes in temperature. Second, wind wears the boulders away. Finally, sand is all that remains (See Bulletin No. 1).

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Nature's Stepchild, the Camel

RECEIVING little glory and less love, the camel plays the rôle of a necessary evil in the deserts of the eastern hemisphere. Military activities in Africa may make him more necessary, for a Camel Corps has proved useful in previous wars in desert territories. The United States imported 75 camels in 1856 for a Camel Corps to patrol the southwestern desert regions, but the experiment was abandoned.

Prehistoric Arabs perceived his usefulness, endured his passive viciousness, and made him the chief means of sustaining life wherever they wandered over the desert regions of Arabia and Africa. Thus the name "Arabian camel," though he is believed from fossil evidence to be an American emigrant, came to identify the tawny, long-necked, long-legged, single-humped "ship of the desert." His habitat has isolated him so that he is practically an animal outcast, feared and avoided by the few other beasts he encounters.

This disinherited son of the Ruminant family was cut off by his relatives, the cattle and deer, without a single horn, without a trace of second and fifth toes, with only the smallest ears, and minus one stomach. But he still clings to the good old Cud-Chewer family trait of a two-way digestive system in the three stomachs he has left.

Arabian Camel Has One Hump; Bactrian, Two

Since being on his own in the desert, he has worked hard for a living and has acquired a few little comforts of his own. Callous cushions on feet, knees, and chest have helped him endure hard desert surfaces. He has learned how to close his oblique nostrils against dust and sand. His hump of muscle and fat is a convenient store-room for extra energy. His foot, with its two toes covered with a cushionlike pad of hardened skin, expands under his weight and prevents his sinking too deeply into sand. It can even be half-soled; caravan guides and drivers carry a piece of leather to sew over it when he is lamed by wearing the whole skin away. Within his digestive tract he can store a gallon or two of water for future reference. His only claim to beauty, his very long eyelashes, are also a great business asset, for they protect his keen vision against sun glare and drifting sand.

This adaptation to desert life has made the camel the most important domestic animal in Africa. A census some years ago in Cirenaica, Libia, estimated that the camel population exceeded the human by 20 to 1—5 million camels for 250,000 people.

If camel family history could be handed down from beast to beast, would a weary Arabian camel lament that his antediluvian ancestors had reputedly trekked across the Bering Sea isthmus from North America into Asia? Would he envy his distant relatives running wild in Turkestan, either never enslaved by man or freed from him by the fabulous Taklamakan sand storm which buried human beings but could not smother camels with closed nostrils? Those would be the only Asiatic cousins to envy, for all the other members of the Bactrian side of the camel family—those stockier shaggy specimens with two humps—are entirely domesticated. Perhaps he would speculate about his South American cousins, who have no hump at all to show for their camel heritage—the llamas, vicuñas, guanacos, and alpacas.

Camel a Jack-of-All-Trades

The life of the Arabian camel is undeniably burdensome. A chief source of income around the Libian Desert is breeding camels to sell to caravans, in some of which as many as 1,000 camels file along at 2½ miles per hour for 16 hours a day. As a desert pack animal the camel is unsurpassed. One can carry 33 gallons of water in light metal tanks, or a little less in the native sheepskin "bottles." His average pack load varies in weight from 250 pounds to 1,000.

Perhaps to give him a reward in heaven, the Arabs call the constellation of the Big Dipper, or Ursa Major, the "Mother Camel," and the Little Dipper is her baby camel.

His ability to dispense entirely with water is frequently overestimated. Lacking both water and grazing, the camel can hardly exist longer than a few days. For a long time, however, camels may be *gizu*, by which Arabs mean "content-with-green-herbage-so-that-they-do-not-need-to-drink." A whole herd may be penned up in a waterless valley for two or three months where rain has brought a covering of green growth, and at the end of that time they will emerge fat and sleek, with great firm humps indicating physical fitness.

The supreme delicacy on the camel menu is a nose-bagful of tree leaves or thorny shrubs.

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rocky crags are red, has red sand also. Often the only marks to indicate a caravan route are tiny piles of stones or the skeleton of a camel or human whom the desert has conquered. Frequently there is no indication at all, when the guides must use their shadow for a compass during the day and follow the stars at night.

Sandstorms sometimes rage for a week at a time, and then the caravan has no rest, for to stop would mean slow but inevitable burial. Travelers limit their supply of water, carried on camels, to two glasses a day, and keep up their strength with strong tea boiled with an equal amount of sugar. The temperature at noon may climb to 110 degrees Fahrenheit, then at night drop almost 80 degrees to a little above freezing.

Strange evidences are found that the desert was once thickly wooded—patches of petrified forest and rock carvings and paintings which show animals that could not live without luxuriant vegetation.

Some life is still encountered in sheltered valleys, where thorny bushes and tough grass furnish sustenance for non-drinking gazelles, some jackals, and a few insects. The tiny oases support tribes of Bedouins, or "Desert-Dwellers."

Note: Students will learn more about this region of Africa from "Crossing the Untraversed Libian Desert," *National Geographic Magazine*, September, 1924; "Here and There in Northern Africa," January, 1914; "Cyrenaica, on the Edge of the Saharan Sands," June, 1930. A half-page map of the Libian Desert accompanies the first article, on page 236.

Bulletin No. 1, November 18, 1935.

Photo by Lehnert and Landrock

RISING TIDE IN A SEA OF SAND

Rippling like water in the wind, the desert is spreading southward at the approximate rate of a mile a year. Since much of the Libian Desert is below sea level, the Egyptian Government has considered inundating it with water siphoned by pipe lines from the Mediterranean. Then the climate of northern Africa might change.

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Tamaulipas, a Little-Known Next-Door Neighbor in Mexico

THE Mexican State of Tamaulipas may soon become more familiar territory to motoring Americans, because highway facilities in this region are being improved. The Pan-American Highway, in fact, enters Mexico in Tamaulipas, at Nuevo Laredo, passes through the neighboring state of Nuevo Leon to reach Monterrey, and returns to Tamaulipas to continue to Mexico City.

The name Tamaulipas may now have an unfamiliar ring to most Americans, but mention of its principal cities—such as Tampico, Nuevo Laredo, and Matamoros—will quickly identify the location of the state, one of the largest and richest in the Republic of Mexico.

A Little Smaller Than Maine

Tamaulipas has an area of 30,734 square miles, a little smaller than that of the state of Maine, and, like that state, occupies the northeastern corner of its country. One of the most diversified of Mexican states, its scenery ranges from lush tropical lagoons along the Gulf of Mexico, to wide plains devoted to cattle raising and fruit growing, and rugged foothills of the great central plateau.

The long, flat northern panhandle of the state, which borders on Texas for about 100 miles, is very dry for eight months of the year. When irrigated, however, it is extremely fertile, producing good grain and fruit crops as well as cattle. Nuevo Laredo, here in the northwestern corner of the state, is becoming familiar to both rail and highway travelers as one of the principal gateways of Mexico.

Well-watered valleys in the southern and central sections grow sugar cane, cotton, bananas, lemons, oranges, grapefruit, tobacco, and coffee. Back in the hills wheat and corn are the chief crops, while beneath the soil lies immense potential wealth in undeveloped gold, silver, copper, asphalt, and salt mines, and marble quarries.

Coastal lagoons, picturesque results of new beaches forming across indentations in the coast, are dominant features of a narrow strip of hot, humid, sandy Gulf country, only 5 to 7 miles wide as it tapers to the south. At the southern end of this coastal zone of Tamaulipas, Tampico is almost surrounded by lagoons and swamps. Although about 6 miles from the Gulf of Mexico, it is one of Latin America's busiest seaports, since dredging and jetties in the Pánuco River have made it possible for large vessels to reach the city's waterfront. There its facilities make Tampico the most up-to-date harbor in Mexico. While it no longer enjoys the boom conditions that earned it the nickname, "Capital of the Oil World," the city still is the center of an important petroleum industry. In fact, four of the richest oil fields in the region are within 100 miles of Tampico. The Pánuco River, so beneficial in supplying an outlet to the sea, can be most destructive in times of flood; the poorer sections of the city are frequently in danger of being inundated.

Highway by Which To Get Acquainted

The new Pan-American highway, improved throughout its length in Tamaulipas, passes through the state capital, Victoria. This once remote sierra town, which is also called Ciudad Victoria, has developed rapidly in recent months as a tourist and hunting center. It now possesses hotels, garages, and tourist camps.

Another road, crossing the Pan-American at right angles here, is being

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Some of the beasts, however, are practically omnivorous, devouring feathers, tent pegs, blankets, or bones with apparent relish.

Photograph by A. M. Hassanein Bey

A DESERT HITCH-HIKER

Perhaps a camel's death necessitated this double duty for another. "Fertile" country like this is welcomed as "easy going," because its tussocks of grass can sustain the camel's strength.

Although chiefly valuable for transport, the camel is pressed into service for many other purposes. The flesh, especially of the young, is esteemed for food, and the rich milk is nourishing. The hair makes coarse, hard-wearing textiles for tent covers and blankets as well as delicate shawls and exquisite rugs. It is also used for rope and cord. When put to work as a draft animal in plowing, drawing water from deep wells, or turning primitive mills, the camel performs these duties stolidly. He works, however, without cooperation but rather under forced submission.

Dromedaries are those camels especially adapted for riding, a lighter, swifter strain than the pack animals. Careful breeding can produce a saddle camel with speed and ease of gait whose long, loping strides lull the comfortable rider; such a mount costs about ten times as much as a pack camel. The Tuareg tribes of the Sahara are extremely careful of their dromedary strain, handing down pedigrees so that some of the animals have long genealogical records like Arabian horses. A rider calls his saddle camel a *"hygeen,"* and drives him by a thin leather bridle through a perforation in the left nostril, in addition to a leather noose around the nose, but without a bit. As the Spartan ideal was to die in battle, the Bedouin's is to die in the camel-saddle.

In spite of his superlative digestion, the camel has no corresponding sweetness of disposition. Although domesticated, he is not entirely tame, just "not wide-awake enough to be exactly wild." His one sport is to attempt biting his neighbors and drivers. When strange camels are first assembled for a caravan, they spend their time fighting viciously. Drivers persuade them into more genteel relations by hitting them hard in the neck until they are stunned. The bond between camel and driver, if and when it exists, is one of dependence and not of affection. Slyly the driver sings jaunty songs in praise of the camel when he wants the caravan to move more smoothly, but his remarks ordinarily are far less complimentary. If the camel's loud bubbling roar could be interpreted as an answering remark, he might be defending his vicious temperament by claiming that he leads a hard life. And no one could deny it.

Note: Camels and life in the desert are discussed at greater length in "Land of Egypt," *National Geographic Magazine*, March, 1926; "Crossing the Untraversed Libian Desert," September, 1924; "Here and There in Northern Africa," January, 1914; "Explorations in the Gobi Desert," June, 1933; "Desert Road to Turkestan," June, 1929.

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Djibouti Holds the Key to Ethiopia's Front Door

AS WAR clouds spread over East Africa, French colonial troops and adventurers as well as refugees are thronging into Djibouti, capital of French Somaliland. For here is the terminus of the only railroad connecting Ethiopia with the ocean and the best route for transporting supplies from the outside world.

Moreover, this dazzling white little city occupies world attention as a French outpost commanding the Red Sea next door to Italy's Eritrea and as a vital link in France's colonial empire.

This small settlement, with less than 12,000 population in normal times, set down in a desolate desert that is one of the hottest spots on the globe, is a city of strange contrasts. It boasts movie theaters, cafes, and a radio station, though its normal white population is under 700. Palm trees fringe the streets between its white buildings, and natives carry on brisk barter in its market place. But in the desert beyond wander tribes that are not far removed from savagery.

Noon Siestas in Self-Defense

Night, when the blistering sun has disappeared, is Djibouti's busy time, for at midday white and black alike shrink into whatever shade there is, and all activity slows to a minimum, from eleven to three.

Since the World War, rail-borne commerce to and from Ethiopia has brought considerable prosperity to Djibouti. Chief exports in normal times are coffee, hides, skins, ivory, animal wax, and salt. The city gains additional importance as being the only French port of call on the Suez route to Madagascar, French Indo-China, and other colonial possessions in the East. The capacious and land-locked harbor has been improved with sea walls, harbor lights, wharves, and warehouses for the convenience of many vessels stopping by for coaling or commerce. Huge piles of salt are always waiting to be shipped.

From the Port of Obock, which France bought in 1864 as a foothold in Somaliland, the capital was moved to Djibouti upon the completion of the railroad from Addis Ababa, some 500 miles away. Construction of the railroad had been so expensive that its passenger fare was originally 25 cents a mile; nevertheless, it was patronized enough to stimulate the growth of the little colony of Djibouti. The first locomotive was attacked with spears by ignorant natives along the route in the belief that it was some sort of super-lion.

"Little Dead Sea" Is a Sapphire Set in Diamonds

Djibouti lies on a coast consisting chiefly of sand and volcanic rock, with here and there a patch of low scrub. The Gulf of Tadjoura, on which it stands, bites into the coast to a depth of 36 miles. Cliffs of volcanic stone form the shores of this gulf for many miles. Five miles inland from the tip of the gulf is Lake Assal, Somaliland's "Little Dead Sea," nearly 500 feet below sea level. Its blue waters are surrounded by beaches glistening with salt deposits on the dried black volcanic mud. Natives gather the salt as a major industry and take it to Djibouti for shipping.

Beyond Djibouti, French Somaliland rises from the coast in a long incline toward the heights of Ethiopia. French colonizers have found and tapped underground water supplies, so that occasionally garden plots now flourish in the midst

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improved from Brownsville, Texas, to the city of San Luis Potosí, through the heart of the Sierra Madres.

South of Victoria the Pan-American highway traverses a region of great scenic beauty, ranging from wild deserts dotted with huge organ cactus, to green river valleys where crystal clear streams wind among palms, bamboo, and waving fields of sugar cane. Occasionally orchids may be seen in the trees. In the mountains west of the road is the "big cat" hunting region of Mexico, where mountain lions, ocelots, turkeys, deer, and quail still abound.

Another new road branches off at Villa Juárez, connecting with Tampico. The State of Tamaulipas is also traversed by railroad and the Pan-American Airways line from Brownsville to Mexico City via Tampico.

Note: Students interested in Mexico will find additional material in "Naturalist's Journey Around Vera Cruz and Tampico," *National Geographic Magazine*, May, 1914; "Along Our Side of the Mexican Border," July, 1920; "Glamour of Mexico—Old and New," March, 1934; "Mexico and Mexicans," May, 1914; "Modern Progress and Age-Old Glamour in Mexico," December, 1934; "North America's Oldest Metropolis," July, 1930.

Further information on Mexico in contained in "Tampico, Spigot of Mexico's Oil Fields," GEOGRAPHIC NEWS BULLETIN, October 16, 1933; "Cuernavaca, 'Sun Child of the Sierras,'" April 10, 1933; "It's 'Mexico, D. F.,' Not 'Mexico City'," October 30, 1933; "Colima, Mexican State of Ranches, Salt Pits, and Buried Treasures," March 18, 1935.

Bulletin No. 3, November 18, 1935.

Photograph by Frank M. Chapman

WINGS TOWARD TAMAULIPAS

A short trip from Tamaulipas by way of the Pánuco River and a connecting canal reaches the beautiful Tamiahua Lagoon, whose shores are the haunt of flocks of the white ibis. These long-legged, long-billed birds nest low in the bushes near the water, where they live in large colonies. They are related to spoonbills and storks. Early Egyptians gave the ibis its name and considered it sacred.

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Eggs for Food Are Not the Hen's Monopoly

"EGGS" may mean only hens' eggs to the average reader—something to eat with ham in the morning. But in the complex civilization of the twentieth century, man finds use for many kinds of eggs.

A New York museum did a thriving business not long ago in eggs of frogs and salamanders. Jelly-encased frogs' eggs found floating in great numbers on top of Long Island ponds were shipped by thousands to public schools, where biology pupils put them in tanks and watched them develop into tadpoles.

The scarcer eggs of salamanders, found in stream bottoms, were shipped to research laboratories where scientists prefer them to other eggs in making certain studies of the embryo.

Chinese Choose "Ripened" Eggs

Roe, masses of tiny fish eggs, and caviar, the prepared and salted roe of certain fish, are favorite delicacies on our menus. The best caviar was long made from the great white sturgeons of Russia. Some caviar, lacking the fine flavor of the original, is made from roe of spoonbills, buffalo fish, and catfish of lakes and rivers in the southern United States.

Cormorants' eggs from the islands off the coast of Peru form a large item on the diet of Peruvians. Eskimos eat quantities of sea birds' eggs. In Nicaragua, hungry natives dig in the sand for alligator eggs, which contain large yolks and are said to taste like ducks' eggs. The Chinese are fond of preserved and pickled eggs, which are kept for months and even years.

Humans are not the only creatures with a developed taste for eggs. Ants and spiders lick their chops over eggs of butterflies. Fish gulp minute eggs of other fish borne on ocean currents. The small greenish cormorant eggs are devoured by gulls and turkey vultures or pierced and sucked by condors.

"More Enemies, More Eggs" Is Their Motto

Birds with few enemies lay but one or two eggs. Most of the north oceanic birds, such as little auks, and black-and-white guillemots, which breed on Arctic cliff ledges, lay but a single large egg; pointed at one end, it rolls in a circle and so does not fall from the ledge. But game birds, which are frequently preyed upon, rear large broods. Some quails lay as many as thirty eggs for a setting.

The quail, however, takes a back seat when compared to marine creatures; these, because of their many enemies, must lay eggs by the millions in order for the race even to hold its own. A cod lays about 5,000,000 eggs, a sturgeon about 7,000,000, a turbot about 14,311,000; but so greatly are the young preyed upon, that only a small proportion will survive to maturity. A mother oyster may be considered lucky if she "raises" successfully one out of ten million children. This ruthless destruction has its advantages, for if every egg in the sea matured, the sea would soon become a solid, squirming mass of fish and marine creatures.

Eggs vary as greatly as people in color, size, and shape. The Auracana, a strange South American fowl, lays blue eggs. Eggs laid in holes or domed nests are usually white, for colored eggs, invisible in dim light, would be in danger of rolling out of reach or of being broken. Eggs of many fishes, floating on the sea surface in masses sometimes 30 feet long, are transparent, which probably helps protect them from being detected and eaten.

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of the dreary desert. Here living under the French flag are the tall, proud and hostile Danakil people, Somalis, Galla, Arabs, and East Indians. France interferes as little as possible with their customs and religions, so for the most part they are peaceful.

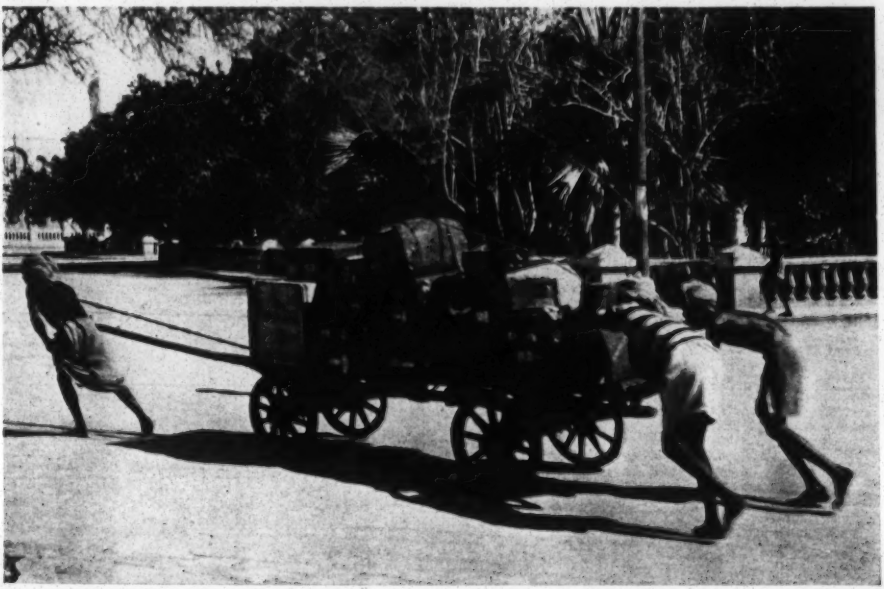
Along the coast they earn their living by fishing and pearl-diving as their main occupations. Farther inland they live scantily on rice, dates, and goats' milk.

Note: French colonists in northern Africa and the natives under their rule are discussed also in "Fez, Heart of Morocco," *National Geographic Magazine*, June, 1935; "Beyond the Grand Atlas," March, 1932; "Sailing Forbidden Coasts," September, 1931; "White City of Algiers," February, 1928; "Across French and Spanish Morocco," March, 1925; "Where Sea and Desert Meet (Tunisia)," April, 1924; and "The Conquest of the Sahara by Automobile," January, 1924.

Bulletin No. 4, November 18, 1935.

Map of Africa

In connection with studies of the Libian Desert and French Somaliland as well as the entire African war zone now so much a matter of interest, an up-to-date map of Africa will be helpful in the classroom. A complete and accurate map of the entire continent, in ten colors, 29½ by 31 inches, was published by the National Geographic Society in June, 1935, showing in detail the location, spelling, political divisions, and transportation facilities of all places now much discussed in news and textbooks. The price of the map, postage paid, is 50 cents if printed on paper. The map on linen, formerly $1.00, may now be had, postage paid, for 75 cents. An index to the 7,162 place names on the map may be ordered for 25 cents extra.



Photograph by Holmes from Galloway

MUCH BAGGAGE USUALLY MEANS TRAVELERS FROM THE WEST

Even in the tropics the white man carries with him large quantities of equipment. Since Djibouti is the doorway to Ethiopia by rail, it is the transfer point for many diplomatic missions bound to or from Addis Ababa.

Plovers lay pear-shaped eggs, while owls and titmice lay spherical ones. Those of sand grouse are shaped somewhat like capsules; those of grebes are pointed at both ends. The generally soft shells of most lizards stretch to accommodate the growing embryo. Eggs of certain shell-bearing sluggs are so elastic that if dropped on stone they rebound several inches.

Birds' eggs vary in size from the tiny white ones of the humming bird to the large one of the ostrich, equivalent to two dozen eggs of the hen. But the ostrich egg is small compared to that laid by the now extinct Aepyornis; measuring nine by thirteen inches, a single Aepyornis egg would make an omelet for a giant.

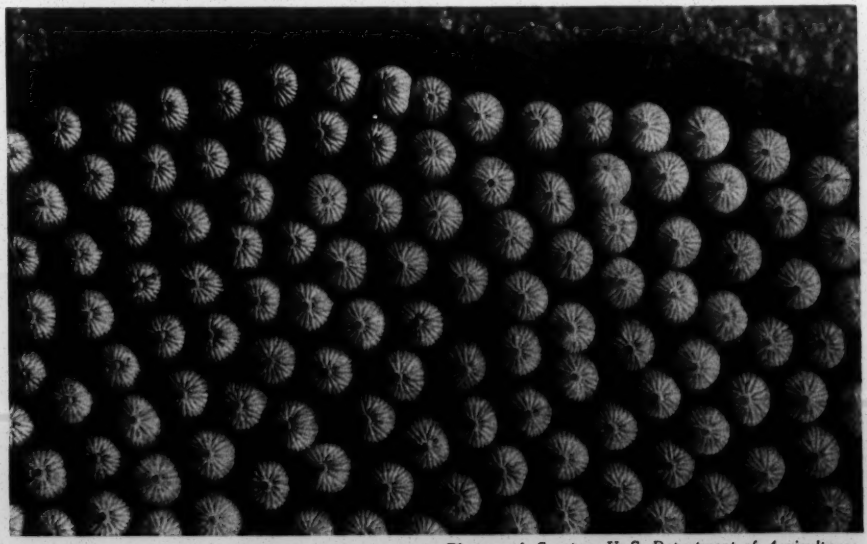
Note: Students interested in natural history will find information and pictures about interesting creatures and their eggs in the following articles in the *National Geographic Magazine:* "Bird Life Among Lava Rock and Coral Sand," July, 1925; "Most Valuable Bird in the World," September, 1924; "Birds of Lake and Lagoon, Marsh and Seacoast" and "Birds That Cruise the Coast and Inland Waters," March, 1934; "Our Friend the Frog," May, 1932; "Certain Citizens of the Warm Sea," January, 1922; "Strange Habits of Familiar Moths and Butterflies," July, 1927.

Related articles may be found also in the GEOGRAPHIC NEWS BULLETINS: "Frog Farming Not Yet Successful Industry," April 1, 1935; "The Penguin, F. F. A.," January 22, 1934; "Surinam Toad Carries a Nursery on Its Back," November 28, 1932.

Bulletin No. 5, November 18, 1935.

Supplement to the Cumulative Index in Preparation

The new Cumulative Index, listing articles, pictures, and maps in the *National Geographic Magazine* between January, 1899, and December, 1934, will be brought up-to-date by a supplement now being prepared for publication on February 1, 1936. The Cumulative Index, in paper binding, costs $1.00 and in cloth binding $1.50, postage included. The supplement, which will cover the year 1935, will fit into the envelope pocket provided at the back of the Cumulative Index. Its price will be 25 cents each, postpaid.



Photograph Courtesy U. S. Department of Agriculture

BUTTERFLY BEAUTY BEGINS IN THE EGG

The microscope reveals each delicately sculptured eggshell as a work of art. A thousand or more of these may be found in one deposit, dropped among the leaves which the caterpillars will eat for their first meal—after they have eaten their own eggs as an appetizer.